## CLAIMS

1. A routing control method of a local area network (LAN) comprising one or more terminals having at least one LAN interface, one or more routers having a routing

5  function performing a relay of data between the LAN and an external network, and a LAN medium connecting the terminals and routers mutually, the routing control method characterized in that:

if the routing function of the router is disabled or

10  predicted to become disabled, during execution of the routing function the router multicasts a routing stop message notifying stop of its routing function, after which another of the routers, having received the routing stop message, multicasts a routing capability message when

15  the router can execute the routing function, so that the routing function is switched.

2. A routing control method comprising:

a step that a first router monitors the status of connection with an external network and when it is decided

20  to cancel the connection, the first router transmits a message notifying a routing stop time, the time remaining until stop of routing function, to the nodes in the local area network to which the router is connected;

a step that a second router receives the routing

25  stop message, and if the second router can execute the

routing function, it transmits a routing capability message notifying the transition time, the time required to enable routing function, to the nodes in the local area network to which the router is connected; and

5          a step that the nodes receiving the routing stop message and the routing capability message switch the destination of their transmissions from the first router over to the second router.

3. A routing control method according to claim 2, 10 including a step that if the first router receives a message directed toward an external network after the stop of its router function, stores the message; and

a step that after the first router receives the routing capability message from the second router, 15 transfers the stored message to the second router.

4. A routing control method according to claim 3, wherein after the first router receives the routing capability message, it transfers the stored message to the second router after the routing capability time has lapsed.

20          5. A routing control method according to claim 2, wherein the second router decides that the routing function of the first router has stopped if the routing stop time in the message received from the first router is equal to or smaller than a predetermined time.

25          6. A router comprising:

a stop message receiving section for receiving a routing stop message giving the routing stop time, the time remaining until stop of routing function, from another router which is executing the router function;

5    a master transition deciding section for deciding whether or not a router can execute the routing function when the message receiving section receives a routing stop message;

a transition time calculating section for 10 calculating the time required to start routing function when the master transition deciding section decides that routing function can be executed;

a routing capability message generating section for generating a routing capability message notifying the 15 required time until routing is enabled; and

a capability message transmitting section for transmitting the routing capability message to the nodes in the local area network to which the router is connected.

7. A router according to claim 6, further including 20 a status monitor section for monitoring the status of connection with an external network and deciding whether or not to cancel the connection;

a routing stop time calculating section for calculating the time remaining until routing stop when the 25 status monitor section decides to cancel connection during

execution of a routing function;

a routing stop message generating section for generating a routing stop message giving the time calculated by the routing stop time calculating section;

5 and

a stop message transmitting section for transmitting the routing stop message to a node on a local area network to which the router is connected.

8. A router according to claim 7, further including

10 a buffer for storing a message to be sent to the external network, received from the local area network to which the router is connected after the stop of routing function, and

a capability message receiving section for receiving

15 a routing capability message from another router,

whereby, when the routing capability message is received, the message stored in the buffer is transmitted to the router which was the source of the message.

9. A router according to claim 7, wherein the

20 routing stop message is a router advertisement message of ICMPv6 and has the routing stop time set in the lifetime field thereof, and the routing stop message is sent to the nodes in the LAN.

10. A router according to claim 7, wherein, if the

25 routing stop time in the routing stop message received is

equal to or smaller than a predetermined time, it is decided that the router which was the source of the routing stop message is under transition into a stop of routing function.

5        11. A router according to claim 7, wherein the routing capability message is a router advertisement message of ICMPv6 and the time required until routing function is enabled is set in the reachable time field thereof, and the routing capacity message is sent to the

10    nodes in the LAN.

12. A terminal comprising:

a terminal receiving section for receiving a routing stop message giving a routing stop time, the time remaining until stop of routing function from a first

15    router now executing the routing function, and a routing capability message giving a routing capability time, the time required until routing function by a second router is enabled; and

a router switch section for switching a

20    communication to be sent to an external network from the first router over to the second router by a timing depending upon the routing stop message and routing capability message received by the terminal receiving section.

25        13. A terminal according to claim 12, wherein the

switching by the router switch section is done after the lapse of the routing stop time and at the lapse of the routing capability time.